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Forward Pixel Geometry Status

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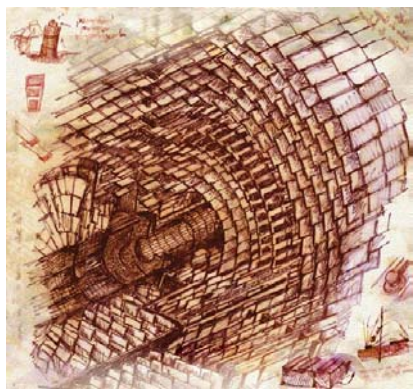

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Forward Pixel Detector

- **Overall positive response from the Tracker workshop**
- ***Two main issues***
  - ***Numbering Scheme***
  - ***Local Coordinate System***
- **Increase in Manpower**
  - ***Purdue University Calumet – Vesna Cuplov (post-doc)***
  - ***University of Puerto Rico – Angel Lopez (faculty), 3 students***
  - ***University of Colorado – Kevin Stenson, John Cumulat (faculties), one student***
- **FPIX digitization: Prof. Angel Lopez (full time, UPR)**
- **Validation of Geometry of FPIX: Osvaldo Aqunies**
  - **Check the New Geometry (Dmitry Onoprienko)**
    - **Position, material …**
- **Improvement of Simulation of FPIX: Xingtao Huang**
  - **Spatial resolution**
  - **Momentum resolution**
  - **Digitization (already existed)**
  - **Charge sharing**
  - **……**

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Status on the two issues

- Changes made to existing numbering scheme for PANELS
  - #0 panel is closer to IP in both Endcaps
  - #1 panel further to IP
- The modified code has been committed into CVS
- The definition of Local coordinate system is derived from the Geometry description of plaquettes (sensors)
  - X is along the Length of Sensors (2-5Rocs)
  - Y is along the width of Sensors(1-2Rocs)
- But Morris Schwartz pointed out that the direction of the Lorentz drift is along the X-axis, so
  - We need to rotate X-axis and Y-axis, s.t.
    - Along X axis, there will be 1-2 ROCS
    - Along Y axis ,there will be 2-5 ROCS

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Discussions

- Dmitry and Teddy … we learnt that
  - As long as Z is in the correct direction & the XYZ frame is right-handed we do not need to make any changes
    - Pixel follows this convention
    - FPIX follows this convention (with no changes)
- However, Dmitry made a version with rotated X- and Y-axes to follow Fillipo's convention
- The correct reference system for CMSSW is:
  - local z-axis is defined to be in direction of the thickness of the box
  - local y-axis is defined to be in direction of the longer side of the box
  - local x-axis is thus in direction of the shorter side of the box